What is claimed is:

1. An electro-optical component, comprising:

a millimeter or submillimeter antenna; and

an optical receiver, wherein the optical receiver comprises an electroabsorption modulator.

2. The electro-optical component of Claim 1, wherein the electro-optical component further comprises an optically active element operably coupled to the electroabsorption modulator.

3. The electro-optical component of Claim 2, wherein the optically active element and the electroabsorption modulator are integrated in the same semiconductor substrate.

4. The electro-optical component of Claim 3, wherein at least two different active layers are arranged on the semiconductor substrate, wherein one layer is optimized for the optically active element and the second layer is optimized for the electroabsorption modulator.

5. The electro-optical component of Claim 4, wherein at least one of the two active layers comprises a QD layer, an MQD layer, a QW layer or an MQW layer.

6. The electro-optical component of Claim 3, wherein the semiconductor substrate comprises an indium phosphide material or a gallium arsenide material.

7. The electro-optical component of Claim 2, wherein the optically active element comprises a laser or an optical amplifier.

8. The electro-optical component of Claim 1, wherein the millimeter or submillimeter antenna is arranged on a semiconductor substrate.

9. The electro-optical component of Claim 1, wherein the millimeter or submillimeter antenna is arranged on a circuit carrier and a semiconductor substrate is fixed on the circuit carrier.

10. The electro-optical component of Claim 1, wherein the millimeter or submillimeter antenna comprises a slotted antenna.

11. The electro-optical component of Claim 10, wherein the slotted antenna comprises a slotted antenna fed by a coplanar conductor.

12. The electro-optical component of Claim 1, wherein the millimeter or submillimeter antenna comprises a Yagi-Uda antenna or a "log-periods" antenna.

13. The electro-optical component of Claim 1, wherein the millimeter or submillimeter antenna is mounted on a silicon lens.

14. The electro-optical component of Claim 13, wherein the silicon lens comprises a hemispherically curved lens.

15. A method for generating millimeter or submillimeter waves, comprising:

converting optical signals into electrical signals with an optical receiver, wherein the optical signals are converted into electrical signals with an electroabsorption modulator; and

radiating the electrical signals with a millimeter or submillimeter antenna.

16. The method of Claim 15, wherein the millimeter or submillimeter antenna comprises a slotted antenna comprising a coplanar conductor.

17. The method of Claim 15, wherein the millimeter or submillimeter antenna comprises a Yagi-Uda antenna or a "log-period" antenna.

18. The method of Claim 15, further comprising focusing the radiated signals with a silicon lens.

19. The method of Claim 18, wherein the silicon lens comprises a hemispherically curved lens.

20. The method of Claim 15, wherein the optical receiver comprises an electroabsorption modulator, and further comprising converting electrical signals from the antenna into optical signals, wherein converting the electrical signals into optical signals comprises

modulating an optical signal using an electrical signal received by the millimeter or submillimeter antenna using the electroabsorption modulator.

21. The method of Claim 20, wherein the optical receiver further comprises a laser, wherein the electroabsorption modulator modulates an optical signal generated by the laser.

22. The method of Claim 21, wherein the laser and the electroabsorption modulator are integrated on a semiconductor substrate, and wherein the light generated by the laser is modulated by the electroabsorption modulator.

23. An electro-optical system, comprising:

a semiconductor substrate;

a first active layer overlying the semiconductor substrate;

a second active layer overlying the first active layer; and

a covering layer overlying the second active layer,

wherein the system comprises an electroabsorption modulator portion associated with the substrate and layers in a central portion thereof, disposed between a laser portion and an optical amplifier portion, respectively.

24. The system of claim 23, further comprising a grating in the laser portion at an interface of the second active layer and the covering layer.

25. The system of claim 23, further comprising an optical waveguide operably coupled to the optical amplifier portion, wherein optical signals generated by the laser portion are modulated by the electroabsorption modulator based on electrical signals applied thereto, and wherein the modulated optical signals are passed to the waveguide through the optical amplifier portion.

26. The system of claim 23, further comprising electrical contacts coupled to the electroabsorption modulator portion, laser portion, and optical amplifier portion, respectively.

27. The system of claim 26, further comprising an electrical waveguide electrically coupled to the electroabsorption modulator contacts, and operable to provide electrical signals thereto for modulation of optical signals from the laser portion.

28. The system of claim 27, wherein the electrical waveguide further comprises a millimeter or submillimeter antenna operable to convert millimeter or submillimeter waves into electrical signals or vice-versa.

29. The system of claim 27, wherein optical signals from the optical waveguide are converted to electrical signals to the electrical waveguide through the electroabsorption modulator portion.

30. The system of claim 27, wherein the semiconductor substrate is oriented upside down with respect to the electrical waveguide, and is electrically coupled to the electrical waveguide through the laser portion contacts, the electroabsorption modulator contacts, and the optical amplifier contacts, respectively, in a flip-chip type arrangement.

31. The system of claim 23, wherein one of the first and second active layer is optimized for the laser portion, and the other of the first and second active layer is optimized for the electroabsorption modulator portion.